AMENDMENTS TO THE CLAIMS

The following listing of claims replaces all prior versions, and listings, of claims in the application:

1. (Currently amended) A method of managing radiation, the method comprising:

providing a semiconducting device having a two-dimensional carrier gas, wherein the semiconducting device comprises at least one of: a heterodimensional diode, a field effect transistor array, a heterodimensional diode array, and an array of rectifying contacts;

exciting the carrier gas [~~using~~] by shining a laser pulse having a duration of approximately one femtosecond to ten picoseconds onto the semiconducting device; and

adjusting a frequency of the radiation using a voltage applied to the semiconducting device.

2. (Original) The method of claim 1, wherein the radiation comprises at least one of: terahertz radiation and microwave radiation.

3. (Original) The method of claim 1, wherein the adjusting step adjusts at least one of: a gate bias voltage, and a drain bias voltage.

4-6 (Canceled)

7. (Original) The method of claim 1, wherein the exciting step includes shining the laser pulse onto at least one of: a top side and a bottom side of the semiconducting device.

8. (Currently amended) A method of generating radiation using a field effect transistor, the method comprising:

shining a laser pulse onto at least one of: a gate-source spacing, a gate, a gate-drain spacing, and a substrate of the field effect transistor; and

adjusting a frequency of the radiation by adjusting a carrier density of carriers in a channel of the field effect transistor.

9. (Canceled)

10. (Original) The method of claim 8, wherein the field effect transistor comprises a transparent gate, and wherein the laser pulse is shone onto the transparent gate.

11. (Original) The method of claim 8, wherein the adjusting step uses a bias voltage applied to a gate of the field effect transistor.

12. (Original) The method of claim 11, wherein the gate comprises a periodic grating gate.

13. (Original) The method of claim 8, wherein the radiation comprises at least one of: terahertz radiation and microwave radiation.

14. (Original) The method of claim 8, wherein the laser pulse has a duration of approximately one femtosecond to ten picoseconds.

15. (Original) A method of generating radiation using a heterodimensional diode, the method comprising:

shining a laser pulse onto at least one of a top side and a bottom side of the heterodimensional diode; and

adjusting a frequency of the radiation using a voltage applied to the heterodimensional diode.

16. (Original) The method of claim 15, further comprising adjusting the frequency of the radiation by using a plurality of heterodimensional diodes.

17. (Original) The method of claim 15, further comprising shining a second laser pulse onto a substrate of the heterodimensional diode.

18. (Original) The method of claim 15, wherein the laser pulse has a duration of approximately one femtosecond to ten picoseconds.

19. (Original) The method of claim 15, wherein the adjusting step comprises adjusting a width of a depletion region formed in the active layer.

20. (Original) The method of claim 15, wherein the heterodimensional diode includes at least one ohmic contact and at least one rectifying contact.

21. (New) A method of managing radiation, the method comprising:

providing a field effect transistor having a two-dimensional carrier gas and a periodic grating gate;

exciting the carrier gas using a laser pulse having a duration of approximately one femtosecond to ten picoseconds; and

adjusting a frequency of the radiation using a voltage applied to the field effect transistor.

22. (New) The method of claim 8, wherein the adjusting step includes adjusting a gate length for the gate.

23. (New) The method of claim 1, wherein the duration of the laser pulse comprises approximately twenty femtoseconds.

24. (New) The method of claim 1, wherein a photon energy of the laser pulse exceeds 1.42 electron Volts.